

System Planning Impacts of Distributed Energy Resources Working Group (SPIDERWG) 2023 Work Plan

Website: SPIDERWG	Chair: Shayan Rizvi (January 2022)	NERC Lead: JP Skeath
Hierarchy: Reports to RSTC	Vice-Chair: John Schmall (March 2022)	Scope Approved: March 2023

#	Task Description	Risk Profile(s)	Strategic Focus Area(s)	Target Completion	Requested Action	Status
Analysis Subgroup (Co-Leads: Adam Weber, Ameren; open)						
S1	Reliability Guideline: Bulk Power System Planning under Increasing Penetration of Distributed Energy Resources <i>Reliability Guideline providing recommended practices for performing planning studies considering the impacts of aggregate DER behavior – study approaches, analyzing BPS performance criteria incorporating DER models into studies, developing study assumptions, etc.</i>	1, 2	2, 3	Q1 - 2024	Yes	Working Group continuing draft of content.
A3	White Paper: Modeling of DER Aggregator and DERMS Functional Impacts <i>White paper to explore the modeling, verification, and study impacts of a DER aggregator and DERMS functions in planning simulations.</i>	1, 2	2, 3	Q2 - 2024	Yes	In draft. Members reaching out to VPPs and other external entities to gather insights. DER aggregator entities not showing up as rapidly nor FERC Order 2222 implemented at rate when work began.
A4* ¹	Reliability Guideline: DER Forecasting Practices and Relationship to BPS Studies <i>Update from older guidance materials to refocus on DER forecasting practices. Will link various forecasting and projection methods to the BPS study needs.</i>	1,2	2,3	Q2-2024	Yes	In draft from older version. Seeking posting at Q2 2024 for comment for later approval.
A5*	Reliability Guideline: Detection of Aggregate DER Response during Grid Disturbances <i>Identified in the Standards Review white paper, this reliability guideline will provide state-of-the-art detection methods to assign higher confidence values for the response of aggregate DERs during many different grid conditions.</i>	1,2	2,3	Q2-2024	Yes	Brainstorming set to kick off Q1 2024.
A6*	Reliability Guideline: Aggregate DER Conditions for Emergency Operations and Cold Weather <i>Identified in the Standards Review white paper, this reliability guideline will cover expected conditions of aggregate DERs during emergency operation conditions and cold weather conditions as well as provide best practices to account for this expected performance during the conditions.</i>	1,2	2,3	Q4-2024	Yes	Brainstorming set to kick off Q1 2024.

¹ The exact work plan number has yet to be assigned for A4 to A6 as the product may be sent to the coordination team, resulting in a different work plan number.

#	Task Description	Risk Profile(s)	Strategic Focus Area(s)	Target Completion	Requested Action	Status
Coordination Subgroup (Co-Leads: David Lemmons, GreyBeard, Jose Cordova, EPRI)						
C2	White Paper: Communication and Coordination Strategies for Transmission Entities and Distribution Entities regarding Distributed Energy Resources <i>Develop recommended strategies to encourage coordination between Transmission and Distribution entities on issues related to DER such as information sharing, performance requirements, DER settings, etc.</i>	1, 2	2, 3	Q4-2023	Yes	Coordination team in drafting document in light of EPRI's TSO-DSO coordination report published in Jan 2022. Document designation subject to change to white paper. In draft. Lowered Priority to account for RSTC Tranche review of RGs.
C5	SPIDERWG Terminology: Working Definitions Document <i>Review and Updates of definitions, terminology, and coordination of terms for consistent reference for DER.</i>	1, 2	2, 3	Ongoing	Information	Latest update October 2021. Will update RSTC as necessary.
C7	Tracking and Reporting DER Growth <i>Coordinated review of information regarding DER growth, including types of DER, size of DER, etc. Consideration for useful tracking techniques for modeling and reliability studies.</i>	1, 2	2, 3	Ongoing	No	In monitoring of growth charts.
C8	Standards Committee Engagement <i>Monitor and support ongoing Projects in the Standards Committee that have originating documents from the SPIDERWG</i>	1, 2	2, 3, 4	Ongoing	No	Monitoring of progress on Projects from SARs originating in SPIDERWG. Ready to support when/if called.
C11	White Paper: Variability, Uncertainty, and Data Collection for the BPS with DER Aggregators <i>Follow up white paper on the DER Aggregator impacts to BPS with respect to variability, uncertainty, and data collection procedures. Potentially a short white paper.</i>	1, 2	2, 3, 4	Q1 – 2024	Yes	In draft. Delayed.
C15	SAR: EOP-004 <i>Draft SAR to RSTC for follow-up from Standards Review White Paper. Reporting of aggregate loss during events for defined thresholds.</i>	1, 2	2, 3, 4	Q1 -2024	Endorse (for final) Review (for draft)	Engaging RS membership in Q4 2023.
C16	SAR: EOP-005 <i>Draft SAR to RSTC for follow-up from Standards Review White Paper. Telemetry requirements for DERs and/or DPs.</i>	1, 2	2, 3, 4	Q4 -2023	Endorse (for final) Review (for draft)	Seeking endorsement vote at December RSTC Meeting
C17	SAR: BAL-003-2 <i>Draft SAR to RSTC for follow-up from Standards Review White Paper. Ensure consistent accounting for DER in balancing conditions.</i>	1, 2	2, 3, 4	Q3 -2024	Endorse (for final) Review (for draft)	In draft. Delayed due to other SARs above. (Lower priority task for SPIDERWG).
C18	SAR: PRC-006 <i>Draft SAR to RSTC for follow-up from Standards Review White Paper. Clarity enhancement for "load" to be including DER.</i>	1, 2	2, 3, 4	Q4 -2023	Endorse (for final) Review (for draft)	In draft. Seeking industry comment in Q4. (Lower priority task for SPIDERWG).
C19	SAR: Many TOP Standards <i>Draft SAR to RSTC for follow-up from Standards Review White Paper. Revise OPA and RTA to clarify for DER.</i>	1, 2	2, 3, 4	Q2 -2024	Endorse (for final) Review (for draft)	In draft. Delayed due to other SARs above. (Lower priority task for SPIDERWG).

Completed and Cancelled Tasks (for Tracking Purposes Only)

#	Task Description	Risk Profile(s)	Strategic Focus Area(s)	Target Completion	Requested Action	Status
Completed Tasks						
M1	DER Modeling Survey <i>Perform industry survey of SPIDERWG members regarding use of DER planning models in BPS studies, dynamic load models and DER modeling guidelines.</i>	1, 2	2, 3	Q4-2021	Approve	Approved December 2021 RSTC.
M2	Reliability Guideline: DER Data Collection for Modeling <i>Guideline providing recommendations and industry practices for the mandatory and optional DER data to be collected by the Reliability Coordinator as well as on how, where, and when to gather such data.</i> <ul style="list-style-type: none"> Review the documentation of existing data collection techniques and processes that has been developed by the industry. Recommendations for DER data collection technique suitable for various study types. <i>Recommendations for the DER data complexity requirements based on DER penetration levels</i>	1, 2	2, 3	Q3 2020	Yes	Approved by RSTC at October 2020 meeting. <i>(High priority task for SPIDERWG)</i>
M3	Reliability Guideline: DER_A Model Parameterization <i>Guideline providing recommendation for DER modeling practices.</i>	1, 2	2, 3	Q3-2019 (Complete)	Yes	Complete.
M4	Review of MOD-032-1 for DER Data Collection <i>(In coordination with activity C4) Proposing MOD-032-1 SAR to address modifications to the standard to facilitate data collection for DERs for interconnection-wide modeling.</i>	1, 2	2, 3, 4	Q4-2019	Yes	Complete. PC endorsed at December 2019 PC meeting. Provided to NERC Standards staff December 2019.
M5	Modeling Notification: Dispatching DER off Pmax in Case Creation <i>Modeling notification on recommended practices and considerations for DER modeling when dispatching DER at output levels other than Pmax in the powerflow and dynamics data. Practices to ensure expected response from DER in these modeled conditions.</i>	1, 2	2, 3	Q3-2019 (Complete)	Information	Complete; approved by SAMS and posted to SAMS webpage.
V1	Reliability Guideline: DER Performance and Model Verification <i>Reliability Guideline covering aggregate DER model verification, including recommended measurement practices, executing model verification activities, model benchmarking, relation to MOD-</i>	1, 2	2, 3	Q1-2021	Yes	Complete. <i>(High priority task for SPIDERWG)</i>

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	<i>033 activities, and conversion of data sources for verification.</i>					
C1	Reliability Guideline: BPS Reliability Perspectives on the Adoption of IEEE Std. 1547-2018 <i>Reliability Guideline of BPS perspectives for adopting and implementing IEEE 1547-2018.</i>	1, 2	2, 3	Q1-2020	Yes	Complete. Approved March 2020, and posted. (High priority task for SPIDERWG)
C4	Review of MOD-032-1 for DER Data Collection see M4 activity.	1, 2	2, 3, 4	Q4-2019	Yes	Complete.
S2	White Paper: Review of TPL-001 Standards for Incorporation of DER <i>White paper discussing technical review of NERC TPL-001-5, and development of any recommendations pertaining to consideration and study of DER impacts to the BPS.</i>	1, 2	2, 3, 4	Q2-2020	Yes	Complete. Approved by RSTC at October 2020 meeting. (High priority task for SPIDERWG)
S2a	SAR: Updates to TPL-001 Regarding DER Considerations <i>Sub-team is developing a SAR that incorporates the recommendations put forth in the approved white paper, considering the items that need standards revisions to improve reliability.</i> <i>This work item also has been updated to include a revitalization of the MOD-032 SAR previously submitted.</i>	1, 2	2, 3, 4	Q4-2021	Yes	Complete. Endorsed by RSTC at the 2021 December meeting. Accepted SAR by Standards Committee in January 2022. (High priority task for SPIDERWG)
S4a	Reliability Guideline: Recommended Approaches for Developing Underfrequency Load Shedding Programs with Increasing DER Penetration <i>Guidance on how to study UFLS programs and ensure their effectiveness with increasing penetration of DER represented.</i>	1, 2	2, 3	Q4-2021	Yes	Complete. Approved December 2021 at the RSTC meeting.
V2	Reliability Guideline: DER Forecasting Practices and Relationship to DER Modeling for Reliability Studies <i>Guidance providing how forecasting practices are linked to DER modeling for reliability studies. DER forecasting practices are important for accurately representing the correct amount and type of DER, particularly at an aggregate level representation for BPS studies.</i>	1, 2	2, 3	Q1-2022	Yes	Approved at March 2022 RSTC meeting
S3	Recommended Simulation Improvements and Techniques <i>Guidance (white paper) to software vendors on tools enhancements for improved accounting and study of aggregate DER.</i>	1, 2	2, 3	Q2-2022	Yes	Approved Q2 2022 RSTC meeting.

#	Task Description	Risk Profile(s)	Strategic Focus Area(s)	Target Completion	Requested Action	Status
O1	White Paper: BPS Perspectives on the DER aggregator <i>Short white paper identifying key BPS reliability perspectives with the recently released FERC Order 2222. Being developed by SPIDERG sub-group leadership and Dan Kopin and will get full review and input from overall SPIDERWG once initial draft complete.</i>	1, 2	2, 3, 4	Q2-2022	Yes	Approved Q2 2022 RSTC meeting. <i>(High priority task for SPIDERWG)</i>
S4b	White Paper: DER Impacts to UVLS Programs <i>Short white paper documenting SPIDERWG's position on DER impacts to UVLS Programs.</i>	1, 2	2, 3	Q3-2022	Yes	Approved Q3 2022 RSTC meeting
S5	Technical Report: Beyond Positive Sequence RMS Simulations for High DER Penetration Conditions <i>Considerations for high penetration DER systems and the need for more advanced tools (e.g., co-simulation tools) for studying DER impacts on the BPS.</i>	1, 2	2, 3	Q3-2022	Yes	Approved Q3 2022 RSTC meeting
C6	NERC Reliability Standards Review <i>White Paper reviewing NERC Reliability Standards and impacts of DER.</i>	1, 2	2, 3, 4	Q3-2022	Yes	Responded to RSTC member comments and seeking RSTC approval at September Q3 2022 meeting. <i>(High priority task for SPIDERWG)</i>
M6	Modeling Distributed Energy Storage and Multiple Types of DERs <i>SPIDERWG will dig into technical considerations of modeling distributed energy storage, specifically distributed battery energy storage (D-BESS). The group will also consider how to model multiple types of DERs, including D-BESS and distributed solar PV (D-PV). Lastly, the group will focus on forecasting and dispatch assumptions for D-BESS. SPIDERWG will determine the level of guidance or reference materials needed once discussions begin.</i>	1, 2	2, 3	Q4-2022	Yes	RSTC approved in Q4 2022 <i>(High priority task for SPIDERWG)</i>
A1	Reliability Guideline Review: Tranche 2 <i>The Analysis team to combine the three DER modeling reliability guidelines to submit a single guideline per the RSTC's Triennial review approved in December 2021.</i>	1, 2	2, 3	Q4 – 2022	Yes	RSTC approved in Q4 2022 <i>(High priority task for SPIDERWG)</i>
C12	SAR: FAC-001 <i>Draft SAR to RSTC for follow-up from Standards Review White Paper. Ensure DP Interconnection requirements are available to transmission entities.</i>	1, 2	2, 3, 4	Q1 -2023	Endorse (for final) Review (for draft)	Seeking RSTC endorsement at Q1 2023 <i>(High priority task for SPIDERWG).</i>
C13	SAR: FAC-002 <i>Draft SAR to RSTC for follow-up from Standards Review White Paper. Ensure</i>	1, 2	2, 3, 4	Q1 -2023	Endorse (for final)	Seeking RSTC endorsement at Q1 2023

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	<i>applicable entities study T-D Interface “qualified changes” when such modifications occur.</i>				Review (for draft)	<i>(High priority task for SPIDERWG).</i>
C9	Reliability Guideline Review: 1547-2018 Adoption <i>The Coordination team to review the BPS Reliability Perspectives on the Adoption of 1547-2018 reliability guideline per the RSTC’s Triennial review approved in December 2021.</i>	1, 2	2, 3, 4	Q1-2023	Yes	Approved Q1 2023 <i>(High priority task for SPIDERWG)</i>
A2	Reliability Guideline Review: Tranche 3 <i>The Analysis team to combine the DER Model verification and DER Data collection reliability guidelines to submit a single guideline per the RSTC’s Triennial review approved in December 2021.</i>	1, 2	2, 3	Q2 - 2023	Yes	Approved Q2 2023. <i>(High priority task for SPIDERWG)</i>
C14	SAR: MOD-031 <i>Draft SAR to RSTC for follow-up from Standards Review White Paper. Ensure pathway to obtain current and forecasted DER capacity data for analysis.</i>	1, 2	2, 3, 4	Q2 -2023	Endorse (for final) Review (for draft)	Endorsed by RSTC Q2 2023 <i>(High priority task for SPIDERWG).</i>
C10	White Paper: Security Risks Posed by DER and DER Aggregator <i>Follow up White Paper on the security risk posed by DER and DER aggregator. Covers both physical and cyber related impacts.</i>	1, 2	2, 3, 4	Q3 – 2023	Yes	Approved at September 2023 RSTC meeting.
Cancelled Tasks						
C3	Educational Material to Support Information Sharing between Industry Stakeholders <i>Develop material to educate industry stakeholders on practices, recommendations and technical work developed by other industry organizations.</i>	1, 2	2, 3	Ongoing	No	Task cancelled; references to industry materials and SPIDERWG materials will be provided in other work products. Ongoing industry outreach and engagement by SPIDERWG members.